

### Remarks

Claims 1-20 are pending in this application after entry of this paper. Independent claims 1, 8, and 15 have been amended to more particularly point out the invention. New claim 20 depends from claim 1 and specifies that the radio frequency (RF) spectrum includes a plurality of channel slots in the form of frequency ranges. The invention is believed to be patentable.

In the final office action mailed on April 3, 2006, claims 1-19 were rejected. Claims 1-19 were rejected under 35 U.S.C. 112, second paragraph. Claims 1-3, 5-6, 8-10, and 12-13 were rejected under 35 U.S.C. 102(e) as being anticipated by Deng et al. (U.S. Pub. No. 2002/0196491). Claims 7, 14-16, and 18-19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Deng. Claims 4, 11, and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Deng in view of Applicants' admitted prior art.

Regarding the rejection of claims 1-19 under 35 U.S.C. 112, second paragraph, claims 1, 8, and 15 have been amended to clarify the antecedent basis for "the HFC forward path spectrum."

Regarding the rejections under 35 U.S.C. 102(e) and 35 U.S.C. 103(a), each of these rejections relies on Deng. Independent claims 1, 8, and 15 have been amended for clarity. The amended claims recite that the head end modulator produces an optical signal that directly drives the network fiber node. The optical signal carries the HFC forward path spectrum. The HFC forward path spectrum includes a radio frequency (RF) spectrum carrying the switchable digital data signal. Deng does not describe these features, and claims 1-20 are believed to be patentable as further explained below.

For example, claim 1 recites an apparatus for use in a hybrid fiber coax (HFC) network to provide an HFC forward path spectrum from the head end to a network fiber node. The apparatus comprises a head end modulator. The head end modulator directly receives a

switchable digital data signal and internally processes the switchable digital data signal to produce an optical signal. The optical signal directly drives the network fiber node. The optical signal carries the HFC forward path spectrum. The HFC forward path spectrum includes a radio frequency (RF) spectrum carrying the switchable digital data signal.

Deng describes a passive optical network that uses coarse wavelength division multiplexing. Figure 4 illustrates a hybrid passive optical network employing wavelength division multiplexing. Upstream node 102 is configured as a central office and exchanges communication signals with a metropolitan area network via a multiplexor and associated digital cross connect 106.

*Deng fails to suggest the production of an optical signal directly driving the network fiber node, with the optical signal carrying the HFC forward path spectrum, wherein the HFC forward path spectrum includes a radio frequency (RF) spectrum carrying the switchable digital data signal as recited in each independent claim.*

In the advisory action, the Examiner notes that, in Deng, signals destined for each remote node are created by modulating light at N distinct wavelengths at the central office. Applicants have amended the claims to clarify with more specificity what is going into and coming out of the head end modulator. Deng does not describe or suggest the claimed subject matter recited in each independent claim.

Deng, via an optical add/drop modulator (OADM) at the metropolitan area network receives signals through digital cross connect 106 at central office 102 that are sent through the passive optical network with coarse wavelength division multiplex lasers. There is no description or suggestion of an optical signal (as claimed) directly driving the network fiber node, let alone any suggestion of a headend modulator receiving a switchable digital data signal, internally processing the switchable data signal, and producing this optical signal, as claimed. Deng does connect the metropolitan area network to a central office with digital cross


connect 106, and passes signals to and from the passive optical network in accordance with the OADM; however there is no suggestion of the claimed invention.

Further, traditional approaches at the head end use radio frequency (RF) combining networks to combine and upconvert signals. The claimed invention addresses problems with these traditional approaches. Deng only relates to signal processing in the optical domain, does not relate to digital and radio frequency domain signals, does not address these problems with traditional approaches at the head end, and does not suggest the claimed invention. Although Deng describes wavelength division multiplexing, this optical technique described by Deng makes no suggestion of the specific claimed subject matter.

For the reasons given above, Applicants respectfully request that the Examiner allow claims 1-20. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

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